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RESPONSE TO ADVISORY ACTION

September 14, 2003

Commissioner for Patents

P.O Box 1450

Alexandria VA 22313-1450

Petition to patent examiner Ruth A. Davis

Pertaining to Advisory Action, date mailed 08/21/2003, regarding patent application serial number 09/888,741, filed by Gene E. Lightner 06/25/2001, response to Advisory Action is enclosed within.

The amended specification, page 5, lines 12 and 13, present an amended statement. In the preferred embodiment of the present invention, as claimed within claim 1, means of producing water soluble carbohydrates derived from lignocellulose is presented. Thus the specification has been amended to meet the requirement of U.S.C. 35. 112 second paragraph.

Remarks regarding patent application serial number 09/841,504, are enclosed on a separate sheet. These remarks determine that prior art is groundless within the present application.

Revised amendment practice, as established within 37 CFR 1.121, is presented. Thus claim listing, 2 pages, is provided within separate sheets, as well as previously presented remarks, making a total of 3 separate sheets.

It is expected that upon examination of the separate sheets, claims, will be allowed by the Examiner.

Very respectfully,

Gene E. Lightner

What is claimed is:

1. (previously presented) A method to produce water soluble carbohydrates from lignocellulose, which comprises:
providing lignocellulose containing cellulose and
providing enzymes to said cellulose, and
providing a membrane to divide a filtrate, and
combining an extractate, from a previous extraction, containing enzymes, with said lignocellulose, and
hydrolyzing said lignocellulose combined with the extractate at a pH of about 5 to produce water soluble carbohydrates and a lignin residue containing water soluble carbohydrates and enzymes, and
filtering said residue containing lignins from said water soluble carbohydrates and enzymes to produce a filtrate and a filtered residue, and
extracting the filtered residue containing lignins with water to substantially extract water soluble carbohydrates and enzymes from the residue to produce a water extracted residue and an extractate for recycle, and
employing said membrane to substantially divide said filtrate containing water soluble carbohydrates and enzymes to provide water soluble carbohydrates substantially devoid of enzymes and provide enzymes for hydrolysis of cellulose contained in said lignocellulose thereby water soluble carbohydrates substantially devoid of enzymes are formed from lignocellulose and a residue containing lignins substantially devoid of water soluble carbohydrates and enzymes is formed along with enzymes for recycle.
2. (original) The method of claim 1 wherein said hydrolysis is accomplished in a vessel.
3. (original) The method of claim 1 wherein said filtrate is subjected to ultrafiltration to substantially separate enzymes from the water soluble carbohydrates and form a solution substantially devoid of enzymes and recycle the separated enzymes for subsequent hydrolysis of cellulose contained in a lignocellulose.
4. (original) The method of claim 3 wherein the, solution containing water soluble carbohydrates, is subjected to hydrolysis and fermentation to form ethanol.
5. (previously presented) The method of claim 1 wherein said lignocellulose is obtained from biomass selected from the group consisting of wood, waste paper and municipal solid waste including an individual or a combination thereof.
6. (original) The method of claim 1 wherein said lignocellulose is provided from dilute acid hydrolysis of a biomass to provide a lignocellulose substantially devoid of hemicellulose.

7. (previously presented) The method of claim 1 wherein enzymes are selected from the group consisting of cellulase, glucanhydrolase and, cellobiohydrolase including an individual or a combination thereof.
8. (original) The method of claim 1 wherein said lignocellulose containing cellulose is accessible to enzymes.
9. (original) The method of claim 1 wherein said extractate contains water soluble carbohydrates.
10. (previously presented) The method of claim 1 wherein water soluble carbohydrates, derived by hydrolysis of lignocellulose, contain glucose.
11. (previously presented) The method of claim 1 wherein water soluble carbohydrates, derived by hydrolysis of lignocellulose, contain glucose polymers.
12. (previously presented) The method of claim 1 wherein water soluble carbohydrates, derived by hydrolysis of lignocellulose, contain cellodextrins.
13. (previously presented) The method of claim 1 wherein enzymes derived from ultrafiltration are recycled to provide enzymes to said cellulose contained in a lignocellulose.
14. (previously presented) The method of claim 1 wherein water soluble carbohydrates, derived by hydrolysis of lignocellulose, containing enzymes are absorbed by cellulose to provide absorbed enzymes for hydrolysis of cellulose contained in a lignocellulose.
15. (previously presented) The method of claim 1 wherein water soluble carbohydrates, derived by hydrolysis of lignocellulose, are subjected to hydrolysis to form glucose.
16. (original) The method of claim 1 wherein said method is continuous.
17. (original) The method of claim 1 wherein said lignocellulose is obtained from pretreated biomass.
18. (original) The method of claim 1 wherein said lignocellulose is substantially devoid of hemicellulose.
19. (original) The method of claim 1 wherein said lignocellulose is substantially sterilized.

REMARKS

The following presentation is intended to comply with 37 CFR 1,111 (b) and 37 CFR 1,111 (c). and respond to rejection of the claimed invention as In re Oetiker, 977 F.2d 1443,24 USPQ2d 1443 (Fed. Cir.1992) as presented by the examiner.

1. Prior art, presented by the applicant, was intended to illustrate individual examples of features within the present invention, however these features were unintended to be combined, as presented by the examiner.
2. Doubtless, if the elements are combined, the references would fall short of claim 1, as amended, within the present invention.
3. Prior art references cited, by the examiner, are vague and unclear or require translation, so these teachings lack motivation to be combined (expressed or implied) so as to produce results of the present invention.
4. Prior art references cited are deficient of any suggestion that modification will result in features claimed within amended claim 1 of the present invention.
5. Prior art references cited are individually complete and functional, so reason or motivation to employ parts, add or combine these teachings is lacking.
6. The combination of references, requiring a multiplicity of steps as indicated, is too complicated to be considered obvious.
7. The fact that multiple references must be combined to achieve results is evidence that the present invention is both novel and unobvious.
8. Key elements within prior art cited, by the examiner, have omitted, for example, the term "extractate".
9. Invention by the applicant, within the present application as amended, solves a problem different from a combination of teachings of the prior art. This result was established by judgment within In re Wright, 6 USPQ 2d 1959 (1988).
10. Consideration of a prior art search resulted in filling the present application and provides evidence that prior art was evaluated and determined to be inapplicable.
11. Regarding prior art references cited, by the examiner, this prior art was found to be unessential to the present application.